Engine oil monitor function

MODEL 129 with ENGINE 112, 113
MODEL 163 with ENGINE 112, 113, 612
MODEL 168 with ENGINE 166, 668
MODEL 202 with ENGINE 112, 611
MODEL 208 up to 31.7.99 with ENGINE 112, 113
MODEL 210 up to 30.6.99 with ENGINE 112, 113, 611

General
The oil level is constantly monitored by the oil sensor, and the appropriate data transmitted to the processor by the ASSYST.
Oil replenishments are detected automatically and result in a bonus, which extends the service interval accordingly.
An excess oil level or insufficient oil level appears in the display together with the oil can symbol.

Display of low oil level at maximum:
D at driver request

Display of warnings:
D automatically, at the earliest 60 s after engine start and oil temperature greater than 60°C:

D if oil level too high: the oil can symbol appears together with the readout "OIL LEVEL ABOVE MAX". In addition, a brief warning signal sounds. (On models not fitted with multifunction displaly, "HI" appears flashing.)
D if oil level too low: the oil can symbol appears together with the readout "OIL LEVEL BELOW MIN". In addition, a brief warning signal sounds. (On models not fitted with multifunction display, the oil level warning lamp (A1e12) comes on and the readout "-2L" appears flashing.)

D if oil at minimum: the oil can symbol appears together with the readout "OIL LEVEL MINIMUM". In addition, a brief warning signal sounds. (On models not fitted with multifunction display, the oil level warning lamp (A1e12) comes on.)

D automatically 13 s after ignition ON:
D if **no oil** is in engine: the oil can symbol appears together with the readout "OIL LEVEL BELOW MIN". In addition, a warning signal sounds. (On models not fitted with multifunction display, the oil level warning lamp (A1e12) comes on and the readout "-2L"appears flashing. In addition a brief warning signal sounds.)

The missing oil quantity displayed no longer changes during the display. In other words, any change in oil level cannot be observed directly at the display. The new oil level is only displayed once the conditions described below exist.

Display of oil quantity at driver request
The text "DISPLAY OIL LEVEL?" appears 10 s after the start switch has been turned into position "2" (on models not fitted with multifunction display, the oil can and the clock symbol are displayed).
If the reset button of the trip counter is pressed twice within one sec. during this readout, for example, "add 1.0L oil" (or "-1.0L")
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appears in the display if oil level too low. The readout appears only after the elapse of a waiting time after engine OFF. The waiting time depends on the engine oil temperature.
It is
D up to 20°C 30 minutes
D from 60°C 1 minute
D The waiting time is between these two limits at other engine oil temperatures.

Possible readouts are (text in parenthesis relates to models not fitted with multifunction display.):
D "OIL LEVEL OKAY" ("o.k."),
D 1.0L, 1.5L, 2L,
D "Overfilling" ("HI"),
D "OBSERVE WAITING TIME" (clock symbol flashing and oil can symbol),
D "DISPLAY OIL LEVEL" (clock and oil can symbols.)

If there is a fault at the oil sensor (oil level/temperature/quality, B40) the oil can symbol and the text "OIL LEVEL SENSOR FAULTY" appears only 30 s after the fault has occurred.
(On models not fitted with multifunction display, the oil level warning lamp (A1e12) comes on accordingly.)
For diagnosis, read also the injection system control module (N3) with the HHT. (The instrument cluster (A1) receives the sensor data through the CAN from the injection system control module (N3)).

Oil change
The ASSYST has to be reset each time the oil is changed. Resetting ASSYST also resets the remaining time and the remaining distance. Resetting can be performed at the instrument cluster or using the HHT.
The following data are stored when the system is reset:
D current kilometer reading rounded off to 100,
D total oil replenishments in the last interval,
D remaining distance,
D remaining time,
D product of the quality factors,
D the data of the last 5 resettings in 5 data sets
These data can only be read with the HHT!

If the specified quantity of oil is not replenished when the oil is changed, the (internal) start distance is reduced.

Detecting oil replenishments
D With the **HHT** it is possible to retrieve the last 10 oil replenishments and the corresponding kilometer readings of the current interval.
D In the normal case, detection of an oil replenishment is displayed by the remaining distance in the instrument cluster being extended

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Oil replenishments are always only detected once the following conditions are met:

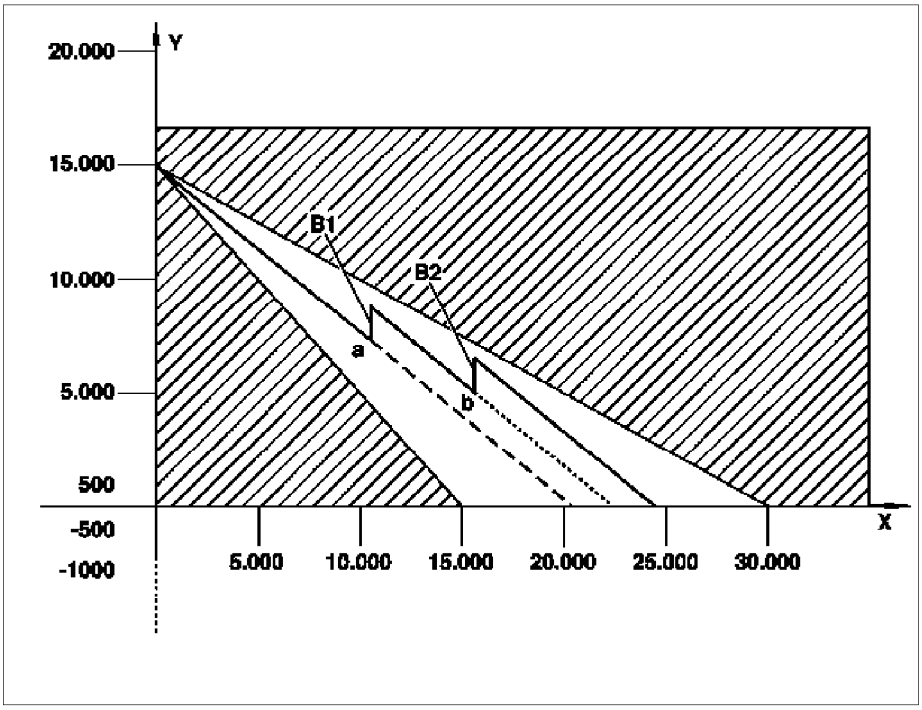
D the replenished quantity is **at least 1 l**

D after replenishing the oil, the car must be driven a distance of **at least 5 km** under **normal driving conditions** at an **oil temperature of at least 60 °C**.

There are instances, however, in which the readout of the remaining distance nevertheless appears implausible after replenishing oil; according to the display, no bonus or only a small bonus has been issued. This is caused by the fact that the remaining distance is always only displayed within a range from 15 000 km up to 30 000 km (or 20 000 km up to 40 000 km in the case of engine 668), but internally the system calculates with the actual values which may also be beyond this range. These internal values can only be displayed with the HHT.

In the charts overleaf, a number of examples of this are presented. The horizontal (x) axis represents the service interval and the vertical (y) axis is the remaining distance in each case in km.
The readout of ASSYST in the instrument cluster always moves within the light range.
The remaining distance calculated internally may also, however, be within the two dark ranges. These internal values can only be displayed with the HHT.
All examples relate to gasoline engines fitted with an oil sensor.

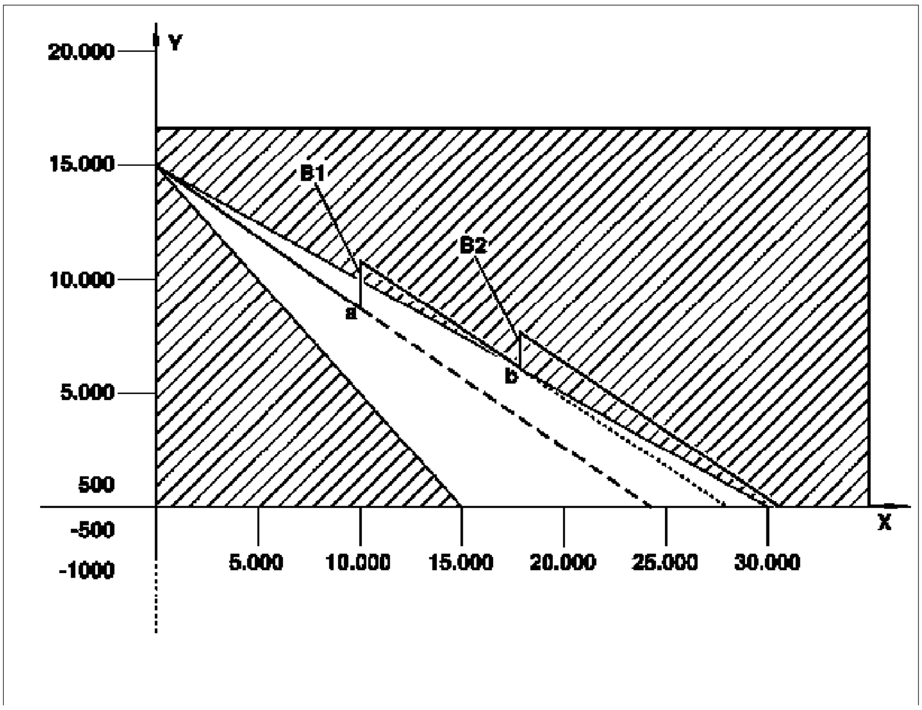
Example 1 :
Sufficient oil was added during the oil change. This means that the starting distance is 15 000 km.
After 10 000 km oil is topped up under normal driving conditions (a). The bonus (B1) is issued and displayed. What this means is that when the remaining distance is retrieved, a greater remaining distance is displayed. (Provided the aforementioned conditions for detecting the oil replenishment are met.)
Oil is topped up again after a further 5 000 km (b). In this case also a bonus (B2) is issued and displayed.
If, after this, no further oil is topped up and the car continues to be driven in the same manner, a service interval of about 24 000 km is thus achieved.
In this example, the curve moves at all points within the light range of the chart; consequently, all the oil replenishments are displayed by increasing the remaining distance.



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Example 2:
The specified quantity of oil was added when the oil was changed.
The car is driven under very favorable conditions and oil is topped up after 10 000 km (a). Internally, the bonus B1 is issued, the service interval is extended accordingly by enlarging the remaining distance. However, as the curve is sometimes within the shaded area, only the part of B1 which is within the light area, is at first displayed as an extension of the remaining distance. (Provided the aforementioned conditions for detecting oil replenishment are met.)

Oil is topped up once again at 18 000 km (b). In view of the fact that the maximum service interval of 30 000 km was exceeded, the bonus B2 is not initially displayed as an extension. The entire service interval in this case is 30 000 km.
If, from point b, the car continues to be driven under less favorable conditions, it may still also be possible now to achieve the maximum service interval of 30 000 km because of the internal bonus B2.



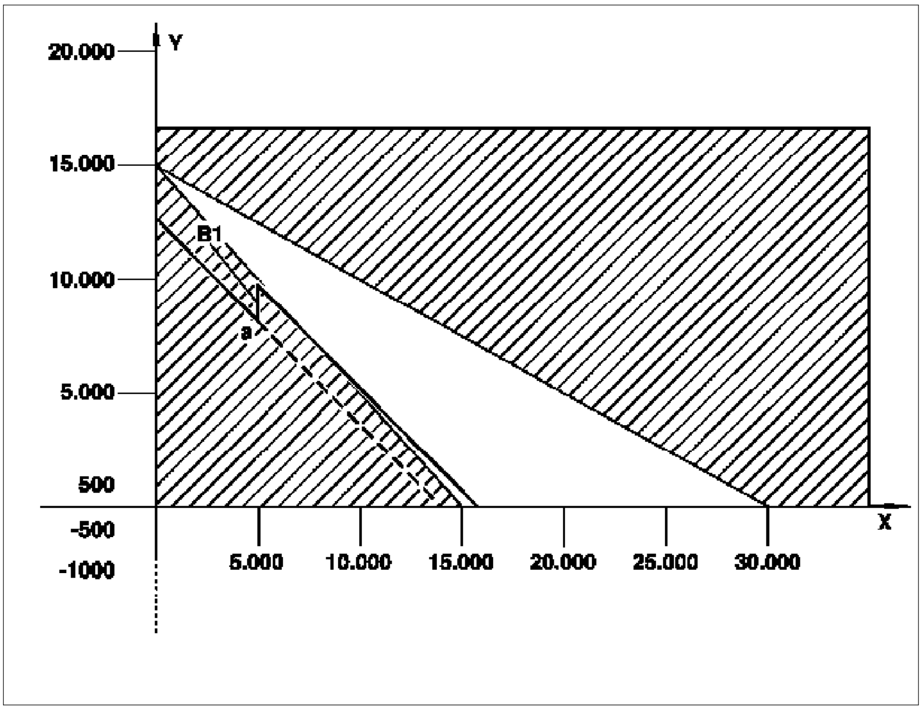
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Example 3:

When the oil was changed, the quantity added was less than the specified quantity. Consequently, the start distance is less than 15 000 km.

If oil is now topped up after 5 000 km (a), the remaining distance displayed is not extended as the curve is within the shaded area. The bonus B1 is nevertheless added internally and results in an extension of the service interval to slightly more than 15 000 km - provided the driving conditions remain the same or are more favorable.

(The service interval of 15 000 km is always reached, however, even if the internal value were less.)



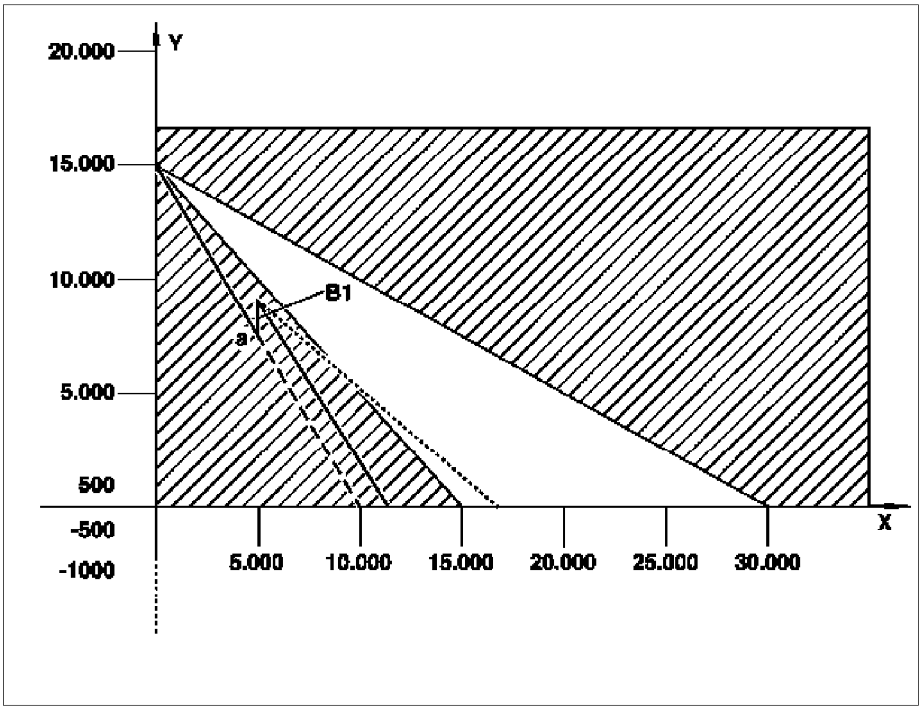
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Example 4:

Oil has been topped up after 5 000 km under unfavorable driving conditions (a) and the oil replenishment (bonus B1) detected internally. We now have two cases to consider:

D If the car continues to be driven under the same conditions (unbroken line), the remaining distance displayed is not extended as the curve is within the shaded area.
The service interval in this case is nevertheless 15 000 km although the internal value is less. (The remaining distance displayed can always only be within the light area.)

D If the car continues to be operated under more favorable conditions (broken line), the value of the internal remaining distance slowly moves into the light area. Consequently, the service interval may be greater than 15 000 km.



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	Active service system survey of display facilities		GF00.20-P-0003-04A
	Active service system technology/ influencing variables		GF00.20-P-0003-05A
	Active service system survey model/engine/sensor/instrument cluster		GF00.20-P-0003-06A
	Active service system (ASSYST) operating instructions, resetting		GF00.20-P-0003-01A
	Oil sensor position/task/function	Oil sensor position, task, function	GF18.40-P-4111A

